CLAIMS:

What is claimed is:

1. A method for forming a dielectric layer comprising:

depositing a dielectric precursor solution onto a surface of a substrate;

spinning the substrate to spread the dielectric precursor solution over the surface of the substrate;

introducing a catalyst through a filter, wherein the filter causes a substantially homogenous distribution of the catalyst within the dielectric precursor solution, wherein a dielectric layer forms containing pores and wherein a solvent is contained in the pores; and

drying the dielectric layer using a carrier gas after introducing the catalyst, wherein the carrier gas places a positive pressure within the pores while removing the solvent to form a low-k dielectric layer.

2. The method of claim 1, wherein the ratio of carrier gas includes a vapor and an inert gas and the ratio of the inert gas to vapor is changed to increase an amount of inert gas to maintain a constant capillary pressure within the pores.

3. The method of claim 1 further comprising:

annealing the substrate after drying the solution.

4. The method of claim 1, wherein the catalyst is an acid catalyst.

5. The method of claim 4, wherein the acid catalyst is chosen from a group of HCL and HNO_3.

6. The method of claim 1, wherein the catalyst is a base catalyst.

7. The method of claim 6, wherein the base catalyst is ammonium fluoride.

8. The method of claim 1, wherein the dielectric precursor solution is $Si(OR)_4$, wherein R is a solvent.

9. The method of claim 8, wherein R is selected from a group of ethanol and methanol.

10. The method of claim 1, wherein the dielectric layer is an aerogel dielectric layer.

11. The method of claim 1, wherein the catalyst is introduced through a filter made of a mesh vapor distribution unit.

12. The method of claim 1, wherein the pores have a range in size from about 01. microns to about 1.0 microns.

13. The method of claim 1, wherein the catalyst is an anhydrous HF.

14. The method of claim 1, wherein the substrate is a semiconductor substrate.

15. The method of claim 1, wherein the substrate is a silicon substrate.

16. The method of claim 1, wherein the substrate is a germanium substrate.

17. A method for forming a silicon dioxide layer in a single processing apparatus comprising:

depositing a silica precursor solution onto a surface of a substrate;

spinning the substrate to spread the solution over the surface of the substrate;

introducing a catalyst through a filter, wherein the filter causes a substantially homogenous distribution of the catalyst within the substrate, wherein a dielectric layer forms containing pores.

18. The method of claim 17, wherein a solvent is contained in the pores and further comprising:

drying the silica precursor solution to form the silicon dioxide layer using a carrier gas after introducing the catalyst, wherein the carrier gas places a positive pressure within the pores while removing the solvent to form a low-k dielectric layer.

19. The method of claim 17, wherein the catalyst is an acid catalyst.

20. The method of claim 19, wherein the acid catalyst is chosen from a group of HCL and HNO_3.

21. The method of claim 17, wherein the catalyst is a base catalyst.

22. The method of claim 21, wherein the base catalyst is ammonium fluoride.

23. The method of claim 17, wherein the silica precursor is $Si(OR)_4$, wherein R is a solvent.

24. The method of claim 23, wherein R is selected from a group of ethanol and methanol.

25. The method of claim 17, wherein the dielectric layer is an aerogel dielectric layer.

26. An apparatus comprising:

a housing;

an opening in the housing configured to pass a substrate into the housing;

a chuck located within the housing, wherein the chuck is configured to hold the substrate for processing and wherein the substrate may be spun using the chuck;

an inlet within the housing, wherein the inlet is configured for connection to a source for a precursor silica solution and wherein the inlet is configured to deposit the precursor silica solution onto the substrate held by the chuck and wherein a film of the precursor solution may be formed on the substrate; and

a filter unit, wherein the filter unit is configured to receive a catalyst and introduce the catalyst onto the wafer in a uniform manner such that the catalyst becomes homogeneously diffused into the film.

27. The apparatus of claim 26, wherein the substrate is a semiconductor wafer.

28. The apparatus of claim 26, wherein the substrate is a substrate for an integrated circuit.

29. The apparatus of claim 26, wherein the substrate is a substrate for a chemical sensor.